

# Mass Timber Strategy Guidance - Latent Defects Insurance

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**This standard provides guidance and support  
on the key hazards and areas to consider, if  
you are building a Mass/Engineered Timber  
Building and require Latent Defects Insurance**

# Mass Timber Strategy Guidance - Latent Defects Insurance



## Introduction

Mass Timber, or Engineered Timber, is a key component in supporting the UK and Aviva's sustainability ambitions. However, the combustible nature and susceptibility to water damage of timber, coupled with a lack of knowledge and independent evidence of how Mass Timber construction will perform against insured perils, means that a cautious approach is required. It is therefore critical that the customer and design team engage with their Construction and Property Insurers, and Broker at the earliest opportunity, and that this continues throughout the project. This can help ensure that adequate Risk Management controls are in place throughout all stages of the construction, whilst also providing a robust operational building at PC and prior to the commencement of any defects liability period.



**Note:** This document is not intended to address liability exposures. The presumption is that all regulatory requirements, Fire Risk Assessments, and compliance with requirements placed by the local authority having jurisdiction which would include licencing, building permissions, regulations, codes, or standards, have or will be met.

## Construction Strategy

When the use of timber as the main construction material is being considered the types and uses of Mass Timber are a large factor that will influence any view on the Insurance risk of the scheme. It is therefore important to ensure that the structural principles of the scheme are well established and are conveyed to all stakeholders as early as possible along with confirmation and details on whether a scheme is a hybrid construction or full timber structure. The following points should be considered for the structure:

- The material for the stability core (Concrete/Steel) must be clear for hybrid structures.
- The percentage of combustible construction used in external walls and roof must be clearly defined.
- Building height and the number of storeys must be clear.
- Specific product information for each type of Mass Timber component proposed to be used on the project should be provided at the earliest stage.

The above construction types are not to be confused with 'Light Timber frame' which is sometimes referred to as 'stick frame', which is a separate form of construction and for clarity is not discussed in this document.

## Information Requirements

When the use of Mass Timber is proposed for a scheme the information which is needed for insurers to be able to fully consider the risk is more detailed than that required for more 'standard' construction materials such as steel, concrete or masonry. The below items would be expected to allow for a suitable pre-quote review to be undertaken:

- Details should be provided that show the design team, Contractors, suppliers and installers have proven experience and knowledge of working in Mass Timber structures and are engaged through all RIBA Stages.
- A detailed design submission including structural and architectural detailing for interaction between Mass Timber elements and traditional material components on hybrid builds should be provided.

**Note:** This is typically Stage 4+ level of information.

## LOSS PREVENTION STANDARDS

- An O&M manual is required at completion, and this should demonstrate that replacement/repairability/access requirements for Mass Timber elements have been considered. This should be agreed at concept stage with a preliminary document available for review at quote stage. Examples of items to be included are:
  - ✓ Access to remove/replace failed components, e.g., walls, floors.
  - ✓ Are Mass Timber elements, e.g., CLT panels, repairable in-situ?
  - ✓ Is there any information discussing in situ repair versus replacement options?

## Design Considerations

The design of Mass Timber and Hybrid structures has various additional challenges over and above more traditional construction materials. The below are important considerations in terms of risk management:

- Timber behaves in a fundamentally different way than traditional primary construction materials. This includes differences such as shrinkage and movement. Anticipating this and the interaction with other materials is key.
- Different material properties/behaviours are an important factor. For example, shortening of timber vertical members under load is substantially different to steel or concrete,
- Significant code gaps exist for designing/detailing of timber working in conjunction with other materials so robust design and detailing is required.
- Compatibility of timber structures with rigid unitised metal/glass/stone cladding elements. Cladding needs to be very rigid to maintain a watertight and airtight envelope whereas timber is a changeable, flexible material.
- Differential movement and the expansion and contraction of timber elements in hybrid construction. Timber swells and shrinks substantially more than steel, concrete or masonry in standard atmospheric conditions.
- The detailing of a Mass timber structure is very complicated and needs careful thought. The thermal effects on timber elements and the potential external and internal interaction of timber requires precise detailing.
- There is a lack of comprehensive published data and information on past performance and potential degradation and/or deterioration of materials over time due to moisture/thermal factors on various materials.
- There are new and novel materials being manufactured and proposed that fall outside of recognised and established codes. If these are being used then extensive substantiation and detailed design is required.
- Consultants may or may not have the personnel with the right skillset for advanced designing or detailing in timber. Specialist designers should be engaged.

## Risk Mitigation

When assessing the use of Mass/Hybrid timber structures there are certain ways of mitigating the risk of being unable to gain suitable insurance at the completion of the scheme. The below are important steps in terms of risk mitigation:

- Designers and specifiers should have a technical skillset unique to timber design that must be harmonised with the technical skillset for design of traditional materials.
- The provision of early designer engagement on a scheme is a key component when materials are not as well understood as more traditional construction materials and standardised literature is not as readily available.
- Preparation and production of a detailed and robust scheme design along with early engagement with key stakeholders will be paramount.
- Provision of third-party technical reviews and audits from the start of the scheme will allow robust technical and construction element oversight.
- Co-ordination and understanding between main a contractor's project management team and the site personnel doing the work is very important. Knowledge and a high level of understanding of a product and its specific requirements are required on site.

- A full plan for water management and weather protection should be in place for the structure during the entire construction phase until the building is fully weathertight. This should include the following as a minimum:
  - ✓ **Sequencing.** The project should be sequenced to minimise exposure of materials in both storage and construction stages to impact from the weather.
  - ✓ **Protection.** Materials should be protected from weather impacts at all stages from delivery to storage to installation and through to weathertight envelope being completed.
  - ✓ **Moisture Management.** Materials should be monitored daily for moisture content and a robust drying and dehumidification strategy for the material should be in place at all times.
  - ✓ **Temporary Weatherproofing.** Refer and comply with manufacturers guidelines on lifespan and maintenance. Exceeding recommended lifespan guidance can lead to water damage.

## Positive Features

**Ground Floor and Basements.** Non-combustible and/or fire resistant.

**Structural Cores.** Non-combustible and fire resistance rating of at least 2 hours.

**Utilities and Services.** No vertical penetrations outside of the structural cores.

**Known Materials.** Materials such as glulam have been in common use and are covered comprehensively by longstanding design codes e.g., BS 5268.

**Engineered Timber Elements.** Coordination clash detection review to avoid unrecorded site-based alterations to manufactured engineered elements.

**Fire Compartmentation and Detection.** Permanent fire compartmentation and fire stopping deployed at the earliest opportunity and incorporated as the building progresses.

**Project Sequencing.** Comprehensive project sequencing ensuring delivery, protection and temporary storage of materials is taken into account including moisture management, weather protection and natural hazard exposures.

## Increased Hazards

Certain exposures will need additional Risk Management focus and collaboration:

- Inadequate water ingress and weather protection both vertically and laterally during and after construction.
- Solar panels and/or Battery Energy Storage Systems (BESS).
- Existing structures, including impairments or lack of detection/protection systems.
- Blue roofs, green (or brown) roofs and living walls.
- Electric vehicle charging points.

## Hot Work and Water Damage

Mass timber buildings are at an increased exposure from fire (smoke and water) and internal and external water sources (domestic, rain and flooding etc). These risks must be managed and controlled during and after the construction works and mitigated in specific working and task based formal risk assessments. Formal hot work and wet work permit to work systems are required.

The following resources should be used:

- ✓ [Construction Insurance Risk Engineers Group \(CIREG\) - Managing Escape of Water Risk on Construction Sites \(5th Edition, November 2019\)](#)
- ✓ [Fire Prevention on Construction Sites Joint Code of Practice 10th Ed.](#)

Aviva Loss Prevention Standards **Hot work Operations** and **Escape of Water on Construction Sites** provide further guidance.

## Construction Risk Management and Procurement Strategy Considerations

- Protection of materials from delivery through to permanent installation including moisture management.
- Weather events - site-based monitoring, mitigation strategies, protection and emergency response.
- Temporary loading of floor plates including mobile plant and material storage.
- Permanent fresh water supplies - leak detection and automatic shut off device.
- Waste-water discharge and back flow prevention devices.
- Temporary and permanent fire detection/suppression and firewater supplies installed as the works progress.
- Continued engagement with the Fire and Rescue Services (confirm public fire water supplies).
- External and Third Party risk exposures to and from the project.

## Specialist Partner Solutions

Aviva Risk Management Solutions can offer access to a wide range of risk management products and services at preferential rates via our network of Specialist Partners.

For more information please visit:

[Aviva Risk Management Solutions – Specialist Partners](#)

## Sources and Useful Links

- [The Construction Insurance Risk Engineers Group \(CIREG\)](#)

## Additional Information

Relevant Loss Prevention Standards include:

- **Hot Work Operations**
- **Escape of Water on Construction Sites**

To find out more, please visit [Aviva Risk Management Solutions](#) or speak to one of our advisors.

**Email us at [riskadvice@aviva.com](mailto:riskadvice@aviva.com) or call 0345 366 6666\***

\*The cost of calls to 03 prefixed numbers are charged at national call rates (charges may vary dependent on your network provider) and are usually included in inclusive minute plans from landlines and mobiles. For our joint protection telephone calls may be recorded and/or monitored.

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## LOSS PREVENTION STANDARDS